ARCHAEOLOGICAL SIGNIFICANCE TESTING OF FOUR SITES
for the
OCOTILLO WELLS SOLAR PROJECT SAN DIEGO COUNTY, CALIFORNIA

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MANAGEMENT SUMMARY

The Gildred Building Company plans to develop a 336-acre solar energy system on approximately 440 acres in the vicinity of Ocotillo Wells, an unincorporated area of San Diego County, California. This project proposes to install single-axis rotating solar panels, and a control and operations management building, a private substation, as well as a series of access roads. ASM Affiliates, Inc. (ASM) was contracted to complete the cultural resources inventory for the proposed project in 2011. ASM identified four sites (CA-SDI-20,345, CA-SDI-20,346, CA-SDI-20,347, and CA-SDI-20,348) and eight isolates within the project area, recommending either avoidance or formal evaluation to assess each resource's eligibility for inclusion in the California Register of Historical Resources (CRHR). The current study documents the results of formal significance evaluation of the four archaeological sites identified during survey. Each of the four sites were tested and are recommended as not eligible for listing in the CRHR as they are not likely to yield additional information that would be significant in the understanding of the prehistory of the region. . No further cultural resources work is recommended for the current project as proposed.

The current investigation was conducted on 23 June 2011 by ASM Senior Archaeologist, Chad A. Willis and ASM Assistant Archaeologists Rachael Myrick and Nick Hanten. Gabe Kitchen of Red Tail Monitoring and Research served as the Native American Monitor during the investigation.

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1.0 INTRODUCTION

This report documents the results of cultural resources testing completed by ASM for the Ocotillo Wells Solar Project, San Diego County, California (Figures 1.1 and 1.2). Gildred Building Company plans to develop a 336-acre solar energy system on approximately 440 acres in the vicinity of Ocotillo Wells, an unincorporated area of San Diego County, California. This project proposes to install solar panels, operations maintenance building, and a private substation, as well as a series of access roads.

ASM conducted a cultural resources inventory of the proposed project area in 2011, which resulted in the documentation of four newly discovered archaeological sites within the project area (CA-SDI-20,345, CA-SDI-20,346, CA-SDI-20,347, and CA-SDI-20,348), and eight isolated finds (Willis et al. 2011). All four archaeological sites are small, sparse prehistoric artifact scatters without any indication of buried cultural deposits. None of the sites appeared to meet the criteria for listing on the CRHR, or to be protected under the County of San Diego's Resource Protection Ordinance (RPO).

The current evaluation program included extensive mapping, surface collection, and hand excavation, exhausting the assemblage of each site, and demonstrated that no subsurface cultural deposits exist at any of the evaluated sites. Additionally, the current study has exhausted the research potential of the assemblage recovered from each evaluated site.

None of the evaluated sites meet the criteria for listing on the CRHR, nor do they justify protection under the County of San Diego Resource Protection Ordinance (RPO).

1.1 PROJECT DESCRIPTION

The Ocotillo Wells Solar Farm Project proposes installation of a photovoltaic (PV) or concentrated photovoltaic (CPV) solar farm for the long-term generation of clean, renewable energy from solar power. The Project requires approval from the County of San Diego for a Major Use Permit (MUP) to allow construction, operation, and maintenance of such facilities.

The Project site is located southeast of the community of Ocotillo Wells, California, within northeastern San Diego County. The Project would affect two privately-owned parcels totaling approximately 440 acres, located 0.4 mile east of Split Mountain Road and three miles south of State Highway 78 (SR 78). The affected County Assessor Parcel Numbers (APNs) are 253-390-57 and 253-390-58, totaling 440 acres (approximately 280 acres and 160 acres, respectively); however, the Project development footprint would be limited to approximately 338.1 of the 440 acres. The development footprint for the Project includes approximately 336.4 acres of the 440 acres, plus approximately 1.74 acres of disturbance for offsite improvements for access purposes (access road/easement from Split Mountain Road). The remaining 103.6 acres on the two affected parcels would remain undisturbed.

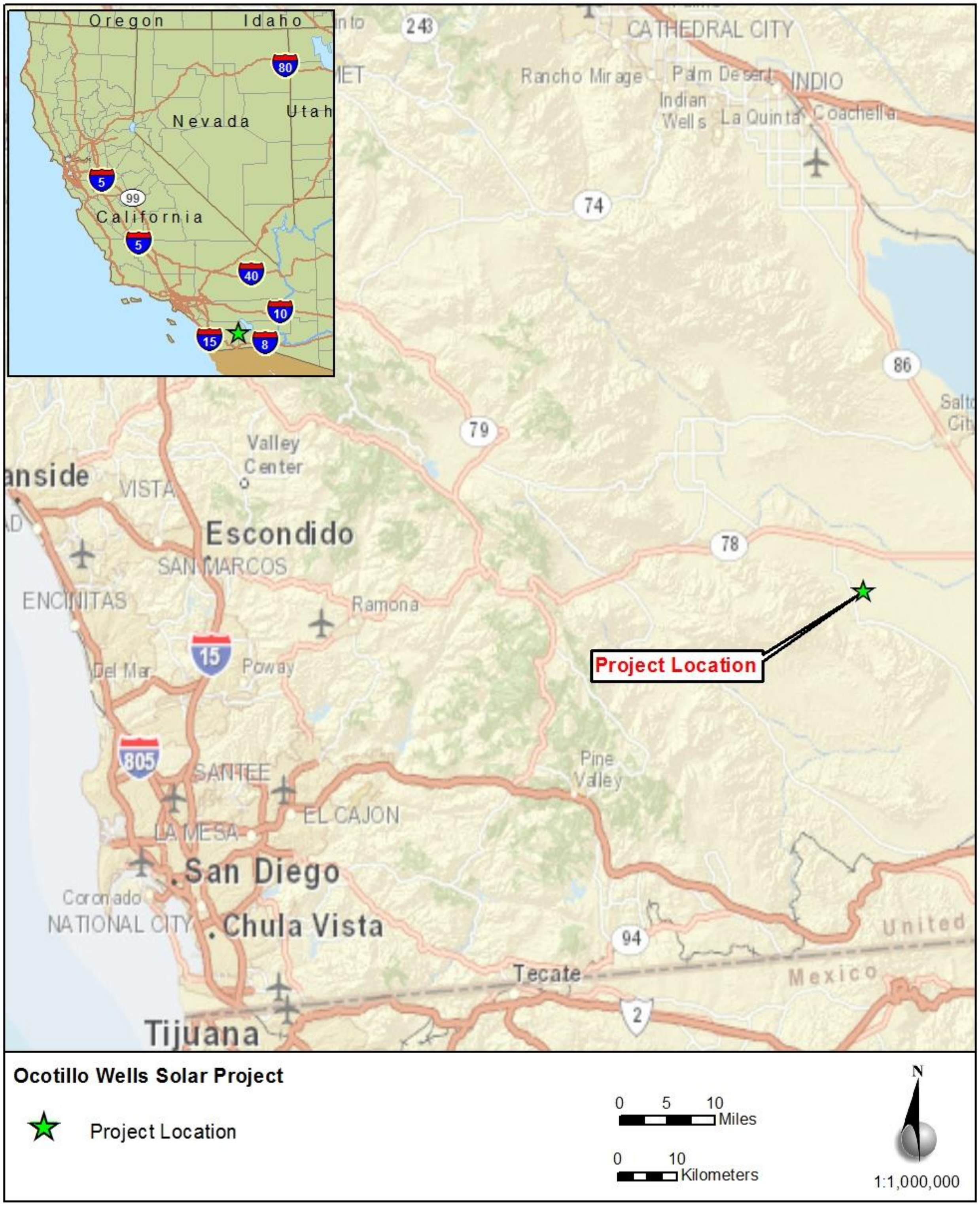

Figure 1.1 Project vicinity map.

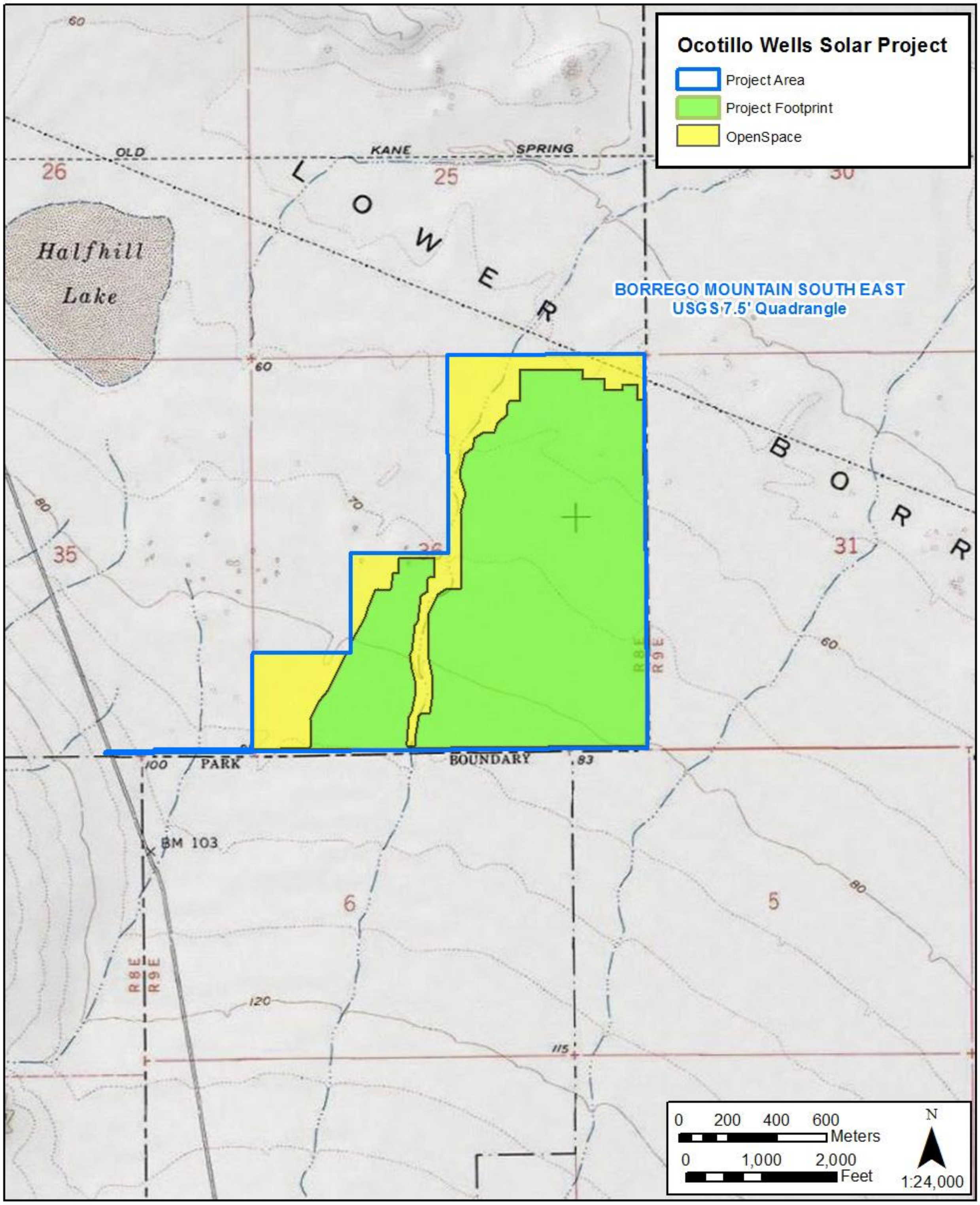

Figure 1.2 Project location map.

The Project site is generally vacant, undeveloped land. Two (abandoned) mobile homes and several supporting miscellaneous outbuildings were recently present on the 160-acre parcel; however, all existing onsite structures, with exception of a well house associated with an existing onsite well (not currently in use), have been demolished and removed from the property.

To allow for flexibility in the type of technology utilized for construction of the solar farm, four variations of available solar technologies are being considered by the Project applicant, as identified below (Table 1.1). Although the overall layout within the proposed development footprint, the supporting components (e.g. equipment pads, one private substation, one operations/maintenance building, point of interconnection, etc.), and Project grading and access requirements would be similar for each of the technologies, minor variations would occur. The ultimate arrangement/number of solar panels, system details, equipment pads and transformer / inverter (PV technology) or transformer/breaker (CPV technology) structures, and internal access roads are shown on the MUP Plot Plans prepared specific to each of the solar collection systems. These layouts are subject to modification during final engineering design.

Table 1.1 Potential Solar Collection Systems for Ocotillo Wells Solar Farm

Type of Solar Generating System 1	Approximate Overall Production Capacity of System (Alternating Current – AC)	Description of System Components	Number of Inverters/ Transformers
Fixed-Axis Rack System	42 MW	Series of solar panels on a fixed-axis rack system / Supported on rack pilings of 4-6 inch diameter metal I-beams or 4-inch diameter round pipe	42
Single-Axis Rack System	50 MW	Series of single-axis tracking, rack-mounted solar panels /Supported on driven pier footings	43
Dual Tracker Units	45 MW	Series of concentrated photovoltaic (CPV) solar trackers / Supported on driven pier footings/concrete foundation	53
Dual-Axis Rack System	54 MW	Series of concentration photovoltaic (CPV) solar panels installed on a dual-axis rack system / Supported on pile-driven pier footings	39

Energy generated by the Project would be transmitted to a private substation proposed in the northeast corner of the site, adjacent to an existing 92 kilovolt (kV) "R-Line." The substation would be dedicated to the Imperial Irrigation District (IID) for operation. The solar farm is proposed to be connected to the R-Line with an interconnection agreement with the IID. The R-Line runs aboveground and connects to the existing San Felipe Substation, located approximately 2.1 miles to the northwest of the proposed point of interconnection.

An estimated 338 acres within the MUP area would be brushed and cleared of vegetation to allow for installation of the solar panels and associated facilities. Within this area, Project grading would vary slightly depending upon the type of technology installed, but is estimated to require a maximum of approximately 370,000 cubic yards (c.y.) of balanced cut and fill. This would include Project grading activities requiring approximately 20,000 c.y. of balanced cut and fill, as well as removal and recompaction of approximately 350,000 c.y. of soil (disturbance to a depth of eight inches over the 338-acre development area) to prepare the site for installation of the solar facilities.

Long-term access would be provided from Split Mountain Road via a 24-foot wide all-weather road (graded to 28 feet in width), over a 40-foot wide private access/utility easement. A series of all-weather fire access roads, of minimum 24-foot width and unsurfaced (covered with a binding agent), would be provided within the development footprint, to meet design requirements of the San Diego County Fire Authority for emergency access. Additionally, a series of unsurfaced roads would be provided within the solar array field to support routine maintenance.

For purposes of dust control, a non-toxic, biodegradable, permeable soil-binding agent or permeable rock material would be applied to all disturbed or exposed surface areas as follows: a) A permeable soil-binding agent suitable for both traffic and non-traffic areas shall be used. These agents shall be biodegradable, eco-safe, with liquid copolymers that stabilize and solidify soils or aggregates and facilitate dust suppression; or, b) Alternatively, a permeable rock material consisting of river stone decomposed granite or gravel may be placed in a thin cover over all exposed surface area in-lieu of the binding agent referenced above. The binding agent would be reapplied approximately every two to three years for maintenance purposes.

Project construction is expected to commence in first quarter 2013. Construction of the Project is anticipated to occur over an 11-month period.

1.2 REGULATORY CONTEXT

CEQA requires that all private and public activities not specifically exempted be evaluated for the potential to impact the environment, including effects to historical resources. Historical resources are recognized as part of the environment under CEQA. Under that act, historical resources are defined as “any object, building, structure, site, area, or place, which is historically significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California” (Division I, Public Resources Code, Section 5021.1(b)).

Lead agencies have a responsibility to evaluate historical resources against the CRHR criteria prior to making a finding as to a proposed project’s impacts to historical resources. Mitigation of adverse impacts is required if the proposed project will cause substantial adverse change. Substantial adverse change includes demolition, destruction, relocation, or alteration such that the significance of an historical resource would be impaired. While demolition and destruction are fairly obvious significant impacts, it is more difficult to assess when change, alteration, or relocation crosses the threshold of substantial adverse change. CEQA guidelines provide that a project that demolishes or alters those physical characteristics of an historical resource that convey its historical significance (i.e., its character-defining features) can be considered to materially impair the resource's significance.

The CRHR is used in the consideration of historical resources relative to significance for purposes of CEQA. The CRHR includes resources listed in, or formally determined eligible for the National Register of Historic Places (NRHP), as well as some California State Landmarks and Points of Historical Interest. Properties of local significance that have been designated under a local preservation ordinance (local landmarks or landmark districts), or that have been identified in a local historical resources inventory may be eligible for listing in the CRHR and are presumed to be significant resources for purposes of CEQA unless a preponderance of evidence indicates otherwise.

Generally, a resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing on the California Register of Historical Resources (Pub. Res. Code SS5024.1, Title 14 CCR, Section 4852) consisting of the following:

1) It is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States; or,
2) it is associated with the lives of persons important to local, California, or national history; or,
3) it embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master, or possesses high artistic values; or,
4) it has yielded, or has the potential to yield, information important to the prehistory or 1

1.3. EXISTING CONDITIONS

1.3.1 Environmental Setting

This section reviews the environmental setting of the survey area, along with prehistoric, ethnohistoric, and historic contexts. Previous archaeological research conducted in the area is also included. The discussion that follows is a summary describing how pertinent investigations in the general region have contributed to the current constructions of past cultural history, and is not intended to be an exhaustive account of all research conducted in the area.

Natural Setting

The study area lies on the margin of the Salton Trough. The Salton Trough consists of a massive graben formed by the interface of portions of the North American and Pacific tectonic plates. The trough formed by the ongoing movement of faults has been filled by immense quantities of sediments that, in places, are up to 6,000 m deep (Morton 1977). Much of this sediment is derived from the continuous uplift and erosion of the high Peninsular Ranges on the west side of the basin, the Transverse Ranges to the north, and the lower Chocolate and Cargo Muchacho mountains to the east.

During the Pleistocene and Holocene periods, the Colorado River periodically shifted its channel between a direct route south to the Gulf of California and a northwest course into the Salton Trough. In the latter phase, it created prehistoric freshwater Lake Cahuilla, which dwarfed its latter-day successor, the Salton Sea, rising to an elevation of 12 m above mean sea level (amsl). Travel between the Peninsular Ranges and the western shore of Lake Cahuilla would have provided one potential motive for prehistoric activity in the present study area.

Typical vegetation in the study area includes creosote (*Larrea tridentata*) and bursage (*Ambrosia dumosa*), established on broad stretches of alluvial sand and gravel. Larger washes host plants of the woodland wash community intermixed with creosote-bursage (Cleland and Apple 2003), along with such species as burrobrush (*Hymenoclea salsola*) and ocotillo (*Fouquieria splendens*).

Fauna common to creosote-bursage environments in the study area include typical desert mammals such as the coyote (*Canis latrans*), black-tailed jackrabbit (*Lepus californicus*), cottontail rabbit (*Sylvilagus audubonii*), and various mice (*Peromyscus* spp.). Among larger mammals, the Sonoran pronghorn (*Antilocapra americana sonorensis*) once occupied open plains and desert areas but is now extirpated in the Colorado Desert. Mule deer (*Odocoileus hemionus*) are occasionally found in areas away from mesa floors. Reptiles such as the desert tortoise (*Gopherus agassizi*), western diamondback (*Crotalus atrox*), rosy boa (*Lichanura trivirgata*), and various lizards and horned lizards are quite common in creosote-dominated habitats (Jaeger 1965).

Evidence concerning environmental conditions in the Colorado Desert during the period of human prehistory is very limited. Pollen-bearing stratified deposits from caves or lakebeds are not as common in the Colorado Desert as they are in the Great Basin, where most of the desert climatic reconstructions have been based. Among other sources, the best information comes from investigations of macrofloral remains in fossil packrat (*Neotoma* sp.) middens along the Colorado and Gila rivers, and extending across the Sonoran Desert to the east (King and Van Devender 1977; Van Devender 1990; Van Devender and Spaulding 1979, 1983). Of greatest relevance to the low elevations of the Colorado Desert are the stratified fossil middens in the Wellton Hills (160-180 m), Hornaday Mountains (240 m), Butler Mountains (240-255 m), Picacho Peak, California (300 m), Tinajas Altas Mountains (330-580 m), and Whipple Mountains (320-525 m) (Van Devender 1990). Van Devender (1990) provides an authoritative review and reconstruction of climate and vegetation over the last 14,000 years from these investigations that is summarized in Table 1.2. We have focused on those data specific to the lower Sonoran Desert.

Table 1.2 Colorado Desert Paleoenvironmental History
(based on Van Devender 1990)

Period	Climate	Vegetation in Packrat Middens
Late Holocene (2000 B.C. - Present)	Modern climatic regime with high summer temperatures, mild winters, and low precipitation in the lowlands. Periodic wetter and drier intervals evident in the uplands.	Lowlands (<300 m): Modern creosote scrub. Uplands (300-600 m): Modern Sonoran Desert habitat distributions.
Middle Holocene (7000 - 2000 B.C.)	Winter-dominant rainfall pattern replaced by modern bimodal pattern. Rainfall 20 percent greater than present. Summer monsoon rains greater than present in uplands and west of the lower Colorado River valley but probably the same as present in the lowlands. A dry altithermal may apply only to winter dominant rainfall areas.	Lowlands: Modern desert scrub with creosote bush, Mormon tea, white bursage, pygmy cedar, ironweed, and catclaw acacia by the beginning of period. Uplands: Juniper disappeared from the Sonoran Desert at 6900 B.C. when modern transition boundary between the Mojave and Sonoran deserts was established. Desert riparian species found on hot, dry, south-facing slopes, unlike modern conditions.
Early Holocene (8000 – 7000 B.C.)	Transitional to present climate with still cooler summers. Rainfall 20-40 percent greater annually and 70 percent greater in winter than present.	Lowlands: Desert scrub already established. Mojavean scrub persisted at sites closest to Colorado River. California Juniper disappeared from the Butler Mountains midden profile. Uplands: Mesic woodland plants and singleleaf pinyon ascended to above 1,315 m after 9000 B.C. Xeric juniper-scrub live oak woodland or chaparral continued, although California juniper disappeared from the Whipple and Tinajas Altas mountains midden profiles.
Late Wisconsin (16,000 - 8000 B.C.)	Summers cooler, winters not much cooler than present but with more freezes. Rainfall 40-60 percent greater than present with winter-dominant pattern.	Lowlands: Mojavean scrub with creosote bush, black bush, Joshua tree, and Whipple yucca. Uplands: Woodland-scrub ecotone at 240-300 m. Xeric juniper woodland with California juniper, shrub live oak, Joshua tree, Whipple yucca, and Bigelow beargrass from 300 to 600 m. Singleleaf pinyon started above 460 m.

During infillings of the Salton Trough by the Colorado River that formed ancient Lake Cahuilla, the maximum shoreline at 12 m (40 ft.) amsl would have supported a freshwater lacustrine littoral wetlands habitat. Predominant flora included cattail (*Typha domingensis*), bulrush (*Scirpus olneyi*), arrowweed (*Pluchea sericea*), and other wetland plants adapted to alkaline soils. These marshy habitats would have attracted migratory waterfowl such as mudhen (*Fulica americana*) and eared grebe (*Podiceps caspicus*) as well as numerous other species like those now occupying the margins of the Salton Sea. The density and distribution of marshy habitats would not have been evenly distributed along the west-facing shoreline but would varied with the near-shore lakebed contours and sedimentology. In many places, wave action from seasonal storms would have produced sandy strand lines parallel to the shore, behind which low-lying depressions would have filled with water that seeped under the strands. The resulting marshy embayments or enclosed marshes would have been particularly attractive to waterfowl and other wildlife, and thus, to prehistoric Native Americans.

The lake would also have supported several Colorado River fish species that would wash in during the flood stages. These include humpback sucker (*Xyrauchen texanus*), bonytail chub (*Gila elegans*), Colorado pike minnow (*Ptychocheilus lucius*), and possibly striped mullet

(*Mugil cephalus)*. These protein sources would have been another major magnet for prehistoric peoples, who would have traveled from the Colorado River and delta and from the Peninsular Ranges.

The Salton Trough, when not filled by Lake Cahuilla, probably contained much the same alkali sink habitat as it now does throughout the Quaternary, although no paleoenvironmental data are available to make a firm determination. At least six Late Pleistocene infillings of Lake Cahuilla have left relic maximum shorelines at elevations between 31 and 52 m amsl. The latest and lowest is tentatively radiocarbon dated at ca. 22,000 years B.P. and has no cultural associations (Waters 1983a). Radiocarbon dating and $^{87}Sr/^{86}Sr$ ratio assays of tufa deposits around Lake Cahuilla independently establish Colorado River inundations extending back at least 20,000 years (Li et al. 2008). Lake Cahuilla continued to rise and recede throughout the middle and late Holocene, and late Holocene archaeological remains are frequently found in association with its maximum and recessional shorelines, extending back in time for at least 3,000 years (Schaefer 1994; Schaefer and Laylander 2007).

Hydrologic modeling for Late Holocene Lake Cahuilla suggests that it would have taken a minimum of about 18 years to fill, and a minimum of about 56 years to recede completely, under modern hydrologic and climatic conditions (Laylander 1997; cf. Waters 1980:44, 1983b:375; Weide 1976:15; Wilke 1978). Archaeologists and geologists have attempted to reconstruct the chronology of the lake, based on radiocarbon dates of archaeological deposits and natural stratigraphic exposures, as well as on early historic-period evidence (Gurrola and Rockwell 1996; Laylander 1997; Love and Dahdul 2002; Meltzner et al. 2006; Moratto 2009; Moratto et al. 2007; Rockwell et al. 1990; Thomas and Rockwell 1996; Waters 1983b; Wilke 1978). The models proposed by various investigators have diverged substantially, based in part on the types of materials that were sampled (e.g., charcoal, shell, bulk soil), the contexts from which they were taken, the precision of the dates that were obtained, the error ranges that were acknowledged for those dates, the calibration methods that were used, and the interpretations of early historical records. The consensus is that there were approximately six high stands in the late history of the lake.

Cultural Setting

The following outline of Colorado Desert culture history largely follows a summary by Schaefer (2007). It is founded on the pioneering work of Malcolm J. Rogers in many parts of the Colorado and Sonoran deserts (Rogers 1939, 1945, 1966). Since Rogers' time, several overviews and syntheses have been prepared, with each succeeding effort drawing on the previous studies and adding new data and interpretations (Crabtree 1981; Schaefer 1994; Schaefer and Laylander 2007; Warren 1984; Wilke 1976). The information available concerning the region's prehistory is nonetheless still quite limited. Ongoing studies are continuing to evaluate and modify this picture, which may change substantially in the future.

Four successive chronological periods, each with distinctive cultural patterns or traditions, may be recognized in the prehistoric Colorado Desert, extending back in time over at least 12,000 years. They include Pleistocene and Early, Middle, and Late Holocene periods. To these is added ethnographic evidence from the modern period, which sheds substantial light on earlier prehistoric conditions. Following that discussion, the general themes of historic Euro-American development in the Colorado Desert will be summarized.

Prehistory

Pleistocene Period (prior to ca. 8000 B.C.)

A Malpais complex is represented by archaeological materials that have been hypothesized to date between 50,000 and 8000 B.C. (Begole 1973, 1976; Davis et al. 1980; Hayden 1976). The term was originally used by Rogers (1939, 1966) for ancient-looking cleared circles, tools, and rock alignments that he later classified as San Dieguito I. The designation Malpais continued to be applied to heavily varnished choppers and scrapers found on desert pavements of the Colorado, Mojave, and Sonoran deserts that were thought to predate San Dieguito assemblages, with their projectile points. Although few would question that most of the Malpais artifacts were culturally produced, dating methods remain extremely uncertain and have been challenged on several grounds (McGuire and Schiffer 1982:160-164). Arguments for early settlement of the Colorado Desert have been further undermined by the redating of the "Yuha Man." Originally assigned to earlier than 18,000 B.C. based on radiocarbon analysis of caliche deposits, more reliable dates based on the accelerator mass spectrometry (AMS) radiocarbon method applied to bone fragments now place the burial at about 3000 B.C. (Taylor et al. 1985).

Early Holocene Period (ca. 8000 to 7000 B.C.)

Most of the aceramic lithic assemblages, rock features, and cleared circles in the Colorado Desert were routinely assigned to the San Dieguito complex by many of the initial investigators. Rogers first distinguished the San Dieguito complex in western San Diego County, based initially on surface surveys and subsequently on excavations at the C. W. Harris Site (Rogers 1929, 1939, 1966). His extensive surveys also identified the complex in the southern California deserts. Rogers proposed three phases of the San Dieguito complex in its Central aspect, which encompassed the area of the Colorado and Mojave deserts and the western Great Basin. The successive phases were characterized by the addition of new, more sophisticated tool types to the preexisting tool kit.

San Dieguito complex lithic technology was based on primary and secondary percussion flaking of cores and flakes. San Dieguito I and II tools include bifacially and unifacially reduced choppers and chopping tools, concave-edged scrapers (spokeshaves), bilaterally notched pebbles, and scraper planes. Appearing in the San Dieguito II phase are finely made blades, smaller bifacial points, and a larger variety of scraper and chopper types. The San Dieguito III tool kit is appreciably more diverse, with the introduction of fine pressure flaking; tools include pressure-flaked bifaces, leaf-shaped projectile points, scraper planes, plano-convex scrapers, crescentics, and elongated bifacial knives (Rogers 1939, 1958, 1966; Warren 1967; Warren and True 1961). Various attempts have also been made to seriate cleared circles into similar phases, but as yet without convincing results (Pendleton 1986).

Because of the surficial character of most desert sites and the scarcity of good chronological indicators, it has been difficult to test the validity of Rogers' San Dieguito I, II, and III phases as chronologically successive changes in the tool kit. Some of the variations may have been present contemporaneously in response to particular functional, ecological, or aesthetic requirements. Subsequent excavations at the C. W. Harris site in coastal San Diego County failed to confirm Rogers' original observation of a stratigraphic separation between Phase II and Phase III assemblages (Warren 1967:171-172). Rogers (1966:39) also identified different settlement patterns characteristic of each phase, but as Vaughan (1982:6-11) argued, these distinctions were inadequately defined and inconsistently applied. In the future, the phase model may be tested and refined, but at present the application of phase distinctions does not appear to be warranted.

The San Dieguito complex appears to reflect a hunter-gatherer adaptation consisting of small, mobile bands exploiting both small and large game and collecting seasonally available wild plants. An absence of milling stones has been seen as reflecting a lack of hard seeds and nuts in the diet, and as a diagnostic cultural trait distinguishing the San Dieguito pattern from subsequent Middle Holocene patterns (Moratto 1984; Rogers 1966; Warren 1967). Portable manos and metates are now being increasingly identified at coastal sites that have been radiocarbon dated earlier than 6000 B.C. and in association with late San Dieguito assemblages. Arguments have also been made for the presence of a developed grinding tool assemblage during early periods, based on finds from the Trans-Pecos area of Texas (Ezell 1984). Specifically in regard to the Colorado Desert, Lorann Pendleton (1986:68-74) remarked that most of the ethnographically documented pounding equipment for processing hard seeds, wild mesquite, and screwbeans was made from wood, which would not normally be preserved in the archaeological record.

Site distributions suggest some of the basic elements of San Dieguito settlement patterns. Sites might be situated on any flat area, but the largest aggregations occurred on mesas and terraces overlooking major washes. Where lakes were present, sites with Lake Mojave complex assemblages are located around their shores. At the northeastern boundary of the Colorado Desert, they occur in the Pinto Basin and around Ford and Palen dry lakes in the Chuckwalla Valley where the nexus with Mojave Desert pluvial lakes traditions are strongest (Carrico et al. 1982; Sutton et al. 2007). These were areas where a variety of plant and animal resources could be found and where water would have been available at least seasonally. It is likely that the chain of lake basins, springs, and tanks through this area provided a network of prehistoric subsistence and travel corridors that connected the Colorado River, Imperial, and Coachella valleys. It is at these water sources and along the trails that the most abundant archaeological evidence can be found. This network continued to develop through the Middle and Late Holocene periods.

<u>Middle to Early Late Holocene Period (ca. 7000 B.C. to A.D. 500)</u>

The Pinto and Amargosa complexes were regional specializations within the general hunting and gathering adaptations that characterized the long Middle Holocene period. These patterns occur more frequently in the Great Basin, the Mojave Desert, and the Sonoran Desert east of the Colorado River. Few Pinto or Amargosa (Elko series) projectile points have been identified on the desert pavements in the Colorado Desert, although that condition is beginning to change as the number of investigations increases. Some late Middle Holocene sites are known, indicating occupations along the boundary between the low desert and Peninsular Ranges and in more favored habitats.

It has been suggested that the environment in the California deserts was unstable and inhospitable during this period, particularly during the so-called Altithermal period between about 5000 and 2000 B.C., and that this condition forced mobile hunter-gatherers to move into more hospitable regions (Crabtree 1981; Schaefer 1994; Wilke 1976). The paleoenvironmental data discussed above do not have the resolution to detect such drastic conditions. Also, as mentioned, Lake Cahuilla may have mitigated Altithermal effects on human occupation in the Colorado Desert.

Several early Late Holocene Colorado Desert sites have been excavated in recent years. The most substantial Colorado Desert site dated to this period is Indian Hill Rockshelter in Anza-Borrego Desert State Park. At that site, 1.5 m of cultural deposits was excavated below a Late Prehistoric component (McDonald 1992). Particularly significant were 11 rock-lined cache pits and numerous hearths, indicative of either a residential base or a temporary camp where food storage was integral to the settlement-subsistence strategy. Also recovered were numerous Elko Eared dart points, flaked lithic tools, and milling stone tools, as well as three inhumations, one of which was radiocarbon dated to 2000 B.C. Two rock-lined pits similar to those at Indian Hill Rockshelter, along with an accompanying early Late Holocene assemblage, were excavated at a small rockshelter in Tahquitz Canyon near Palm Springs (Bean et al. 1995). The small number of artifacts at the site suggests strategically stored food processing equipment that was used by a small, mobile group.

Several important early Late Holocene sites recently have been documented from the northern Coachella Valley (Love and Dahdul 2002). Deeply buried midden deposits with clay-lined features and living surfaces, cremations, hearths, and a rockshelter deposit have been found at various sites in association with calibrated radiocarbon dates ranging from before 1000 B.C. to A.D. 700. Radiocarbon dates of almost 1000 B.C. and associated bird and fish bone confirm an early Late Holocene Lake Cahuilla occupational horizon, as well as early interlacustral phases. Larger habitation sites from this period remained elusive in the Colorado Desert until 2006, when a series of deeply buried midden deposits and some house features were discovered under alluvial fan and dune formations at the very northern end of the Coachella Valley at Seven Palms near Desert Hot Springs (Mariam Dahdul, personal communication 2006). These findings bring Colorado Desert cultural history more in line with comparable patterns in the Mojave Desert and Owens Valley.

Early projectile points in Imperial County have generally been reported only as isolates on desert pavements, but a recent inventory at the Salton Sea Test Base produced a cluster of early projectile points, including Lake Mojave, Pinto/Gatecliff, and Elko forms, and even two eccentric crescentics, scattered among protohistoric sites on the bed of Lake Cahuilla 30 m below sea level (Apple et al. 1997; Wahoff 1999). If these points are in situ, as the investigators suggest, presumably they escaped burial by lake sediments or were subsequently reexposed. An alternative explanation may be that they were collected elsewhere and reused by protohistoric occupants. Several large points also have been reported within the Truckhaven area. Direct evidence of a Middle Holocene occupation comes from the Truckhaven flexed burial (CA-IMP-109), found under a cairn and dated to 5790 ±250 B.P. (Taylor et al. 1985; Warren 1984:404).

The emerging picture of late Middle Holocene and early Late Holocene occupation in the Colorado Desert is of mobile hunter-gatherer bands with atlatls for hunting and milling stones for seed and nut processing, operating out of a limited number of base camps in optimal areas on the boundaries of the Salton Basin and on the shoreline of Lake Cahuilla. This pattern may be viewed as a cultural precursor of the Late Holocene period, although linguistic data and tribal origin stories suggest some demographic displacements also occurred.

<u>Late Prehistoric of the Late Holocene Period (after ca. A.D. 500)</u>

Sites dating to the Late Prehistoric of the Late Holocene period are probably more numerous than any others in the Colorado Desert. The period has sometimes been divided into four phases, including a pre-ceramic transitional phase from A.D. 500 to 800. The major innovations were the introduction of pottery production using the paddle-and-anvil technique around A.D. 800, initiating the Patayan I phase, and the introduction of floodplain agriculture on the Colorado River, perhaps at about the same time (Rogers 1945). Within the Colorado Desert, according to some investigators, ceramics first appear around A.D. 1000 (Love and Dahdul 2002). Exact dating for the presence of early domesticated plants is not available (Schroeder 1979). Both these technological advancements were presumably introduced either directly from Mexico or indirectly through the Hohokam culture of the Gila River (McGuire and Schiffer 1982; Rogers 1945; Schroeder 1975, 1979). The most recent Late Holocene episodes of Lake Cahuilla have been taken to define the Patayan II phase, previously dated between about A.D. 1050 to 1500 and bracketed by Patayan I and III phases. However, recent research has demonstrated that a lake infilling occurred between A.D. 1600 and 1700 (Laylander 1997; Schaefer 1994). As discussed in the environmental section above, the now-confirmed presence of lake stands both before A.D. 1050 and after A.D. 1500 casts some doubt on the viability of the perceived Patayan I, II, and III phase distinctions as a more complex and accurate understanding of Lake Cahuilla natural history is attained. The phases of Lake Cahuilla infillings and recessions may have influenced demographic movements and intercultural contacts, perhaps even playing a role in the introduction of ceramics and other cultural traits that have been used to differentiate the Patayan phases. How Lake Cahuilla acted as a stimulus for cultural change in the Colorado Desert remains a questions of intense interest. Answers to these questions can only be made after more investigations of well-dated Late Prehistoric sites with demonstrable Lake Cahuilla associations are undertaken.

Lyndon L. Hargrave (1938) coined the term “Patayan” from the Walapai word for “old people” to refer to the late prehistoric archaeology of the Colorado River Valley. In so doing, he wanted to avoid assumptions that specific prehistoric cultures in this area were directly ancestral to the modern Yuman cultures. The Patayan pattern is equally applicable to the prehistoric ancestors of the desert Cahuilla, who speak an unrelated language but whose culture shares many of the economic and technological attributes of the cultures of the Yuman speakers.

Harold S. Colton (1945:118) applied a direct historical approach to developing a Patayan culture scheme. Relying on very little information, for the most part no more than surface sherd scatters, he made an initial attempt at defining a Patayan pattern. Assuming that the ethnohistoric practice of intensive warfare among Colorado River peoples extended back into the prehistoric past, he postulated that the center for the dispersion of Patayan peoples to the east and west lay on the Colorado River and was brought about by high population densities of warlike communities that were circumscribed by inhospitable desert conditions. The Ipai, Kumeyaay, and Tipai of California and the Havasupai, Walapai, and Yavapai of western Arizona were some of these offshoots. The presumption was that these people had been pushed into other areas by the same process of warfare that later drove the Kahwan, Halyikwamai, and Halchidhoma off the river to become ultimately amalgamated with the Maricopa on the Gila River in the early nineteenth century. Colton also revised Alfred L. Kroeber's (1943) classification of river and delta Yuman languages to propose a southern branch (Laquish) centered on the Colorado Delta and a northern branch (Cerbat) centered on the Needles area. In another paper, Colton tentatively classified the Cohonina and Prescott patterns as branches of Patayan in the mountains of northwestern Arizona.

While Colton's cultural scheme focused on Arizona, Rogers established the first systematic culture history and artifact typologies for the Colorado Desert in California, but also including evidence from western Arizona. Rogers' (1936, 1945) investigations of Yuman ceramics and culture history remain fundamental for archaeological research in the region. He distinguished three phases of Late Prehistoric archaeology in the Colorado Desert as Yuman I, II, and III, with Yuman II being contemporary with the late Holocene phase of Lake Cahuilla between around A.D. 1000 and 1500. In applying the label "Yuman," Rogers brought back the assumed association between the archaeological pattern and a specific linguistic grouping.

Also included in this early period of basic archaeological research is Albert H. Schroeder's examination of lower Colorado River sites (Schroeder 1952, 1979). Schroeder (1961) excavated the Willow Beach site, located just below Boulder Canyon, one of the few stratified Late Prehistoric sites known on the Colorado River. He developed a cultural sequence that emphasized the similarities of the Colorado River assemblages with the upland areas of western and central Arizona, lumping a number of cultural patterns into the concept of the Hakataya pattern, an expanded version of Rogers' Yuman pattern (Schroeder 1979). Some scholars found Schroeder's concept of the Hakataya to be too inclusive and also noted conflicts with Rogers' original Yuman ceramic typology (see McGuire and Schiffer 1982). Schroeder (1957, 1958, 1975) postulated associations between subdivisions of the Hakataya pattern, certain ceramic types, and historically identified tribal groups. These branch-ceramic-tribal associations include, among others, the linking of the Roosevelt branch, Tonto Brown pottery, and the Southeast Yavapai; the Cerbat branch, Cerbat Brown, and the Walapai; the La Paz branch, Needles Buff, and the Halchidhoma; the Palo Verde branch, Tumco Buff, and the Quechan; the Amacava branch, Parker Buff, and the Mohave; and the Salton branch, Topoc

Buff, and the eastern Kumeyaay. This approach may give insufficient consideration to the mobility of some groups, who may have produced different ceramic types depending on the proximity of particular clay types to their seasonal settlements.

The term “Patayan” regained prominence with the publication of *Hohokam and Patayan* by Randall H. McGuire and Michael B. Schiffer (1982). They provide a critical history of the development of the terminology and cultural concepts. Michael R. Waters (1982a, 1982b) applied the term to a ceramic chronology and typology for the Colorado Desert, based on Rogers’ unpublished notes and type collection at the San Diego Museum of Man. Waters critically discussed differences between Rogers’ and Schroeder’s approaches, both in the definition of prehistoric cultures and in the application of a Lower Colorado River Buff ceramic typology.

Within the Late Holocene period, desert peoples of this region developed broad-spectrum and diversified resource procurement systems emphasizing a collector organization that made use of residential bases and temporary logistical camps, scheduled according to the ripening seasons of staple plant resources. Mobility was an important element in this pattern, with frequent travel between the Colorado River and Lake Cahuilla when the lake was present. The diversity of sites and assemblages associated with Lake Cahuilla indicates considerable variability in late prehistoric and protohistoric social and ecological adaptations to the lake (Wilke 1978). The number of house pits at fish camps ranges from one to more than a dozen, perhaps indicating the number of households in residence at any one time. Fish traps range from single examples to long lines that are suggestive of cooperative fishing ventures. Archaeological excavations of house pits indicate that some have well-developed middens and diverse artifact types, suggestive of season-long temporary camps, while others have only sparse artifact associations suggestive of short-term fishing expeditions. Faunal assemblages vary from those largely limited to fish bone or the remains of migratory water birds, to others that contain more diverse resources, including rabbit and large mammal bone. This variability in site types and assemblage contents has yet to be correlated in a systematic manner with other variables, such as the recessional stages of Lake Cahuilla (reflected in elevation), localized geography and paleoenvironments, ethnicity, or other factors (Schaefer 2000; Schaefer and Laylander 2007).

The numerous trail systems throughout the Colorado Desert attest to long-range travel to special resource collecting zones and ceremonial locales, trading expeditions, and possibly warfare. Pot drops, trailside shrines, and other evidence of transitory activities are associated with these trails (McCarthy 1993). During the Late Holocene and perhaps during earlier periods as well, an important travel corridor existed to the northwest of Black Mountain and south of the Chocolate Mountains. A series of long trail segments with associated ceramic pot drops and lithic scatters exists parallel to Ninemile Wash and SR-78, linking the Colorado River and Imperial Valley. Another corridor went up the Salt Creek Pass between the Chocolate Mountains and the Orocopia Mountains, following alternative routes either through the Chuckwalla Valley or following a string of springs and tanks south of the Chuckwalla

Mountains. In the historic period this route was known as the Coco-maricopa Trail (Johnston 1980; Johnston and Johnston 1957; McCarthy 1982).

Trade and travel is also seen in the distribution of localized resources such as Obsidian Butte obsidian, wonderstone from the south end of the Santa Rosa Mountains, soapstone, marine shell from the Gulf of California and the Pacific coast, and different ceramic types. The Elmore site near Kane Springs, for example, contained evidence of *Olivella* shell bead manufacturing and other shell processing, trade, and possibly cultural connections with delta Yumans who may have been displaced during Lake Cahuilla infillings (Laylander 1997; Rosen 1995; Schaefer 2000). Evidence of metate manufacture is also documented at several sites in the Superstition Mountain area where outcrops of Imperial Formation sandstone afforded a ready local material for milling equipment (Schaefer 1988).

Historic Background

The study area has generally been marginal to major historic period events in the Colorado Desert (Lawton 1976). The wider region first came to the attention of Europeans in 1539-1540, when Francisco de Ulloa reached the northern limit of the Gulf of California, Hernando de Alarcón sailed up the lower Colorado River at least as far as present-day Yuma, and Melchior Díaz travelled overland from Sonora to reach and cross the river. Juan de Oñate traveled down the lower Colorado River between the Bill Williams River and the delta in 1605-1605. The portions of the desert west of the Colorado River were only first visited as late as the 1770s, when Francisco Garcés and Juan Bautista de Anza pioneered a route from the Colorado River to coastal southern California

Ethnohistory

The lower Colorado River area was one of shifting tribal boundaries in ethnohistoric times due to intertribal warfare (Forbes 1965). When Alarcón sailed up the lower Colorado River in 1540, he described a situation of incessant warfare. During Oñate's 1604-1605 expedition, he found the Halchidhoma living south of the Gila River confluence, along with the Kahwan and Halyikwamai. Oñate encountered the Ozaras, who were probably a Piman-speaking group, at the Gila-Colorado junction, and the Bahacecha, who may possibly have been Quechan, between the Ozaras and the Mohave (Laylander 2004). Almost a century passed until Jesuit missionary Eusebio Francisco Kino made half a dozen visits to the vicinity of the Colorado-Gila junction between 1699 and 1706 (Bolton 1936; Burrus 1971; Kino 1919). Another Jesuit, Jacobo Sedelmayr, returned in the 1740s and 1750s (Donohue 1969; Sedelmayr 1955). Finally, the Franciscan missionary-explorer Francisco Garcés and the soldier Juan Bautista de Anza in the 1770s established a strong east-west travel link across the Salton Basin (Bolton 1930; Garcés 1900). The eighteenth-century observers clearly found substantial evidence of ethnic displacements since the previous century, and substantial further changes would occur during the early nineteenth century (Spier 1933).

During the early historic period, the Kamia were politically and militarily allied with the Quechan and Mohave, in opposition to the Cocopa and Maricopa. They maintained good relations with the Quechan at the confluence of the Colorado and Gila rivers and were permitted a farming rancheria at the large Quechan settlement of Xuksil (in Quechan, "sandstone"), located a few kilometers south of the modern Mexican town of Algodones and north of the branching off of the Alamo River near the southern tip of the Imperial Dunes (Russell et al. 2002:84). These people were collectively known as the Kavely cadom or "south dwellers" and were known to the early Spanish expeditions as the rancherias of San Pablo; their leader was also named Captain Pablo. They were estimated to number 800 people when the Anza Expedition passed through in 1774 (Bolton 1930(2):51; Forde 1931:101). The Franciscans established the mission community of San Pedro y San Pablo de Bicuñer near this location in 1780, along with another mission community at La Purísima Concepción, later to become Fort Yuma. Both were destroyed in a Quechan uprising in 1781 (Forbes 1965:191-204).

An 1849 census counted 254 Kamia people on the New River in Imperial Valley under Chief Fernando. They included 118 men, 82 women, and 54 children (Heintzelman 1857:53). By 1860, the County of San Diego Census recorded 105 Kamia people at New River (Indian Wells or *Xachupai*), distributed among 11 households or rancherias and led by a Captain Zacariah (San Diego Genealogical Society n.d.:120-122). This record is especially valuable because it lists each household member by name, sex, and age. Presumably their numbers were much greater before the advent of European diseases and probably dropped even more drastically with the rampant smallpox and measles epidemics of the 1860s. A series of prolonged droughts or floodwater failures in the nineteenth century also took their toll on the population and eventually drove most Kamia in Imperial Valley to live at the rancheria of *Xatopet*, possibly on an east-west portion of the Alamo River south of the Imperial Dunes near the village of Huerta, Baja California. This was an emergency planting place that the Quechan also used, as when the Colorado River failed to flood in the summer of 1851 (Kroeber 1980:190). The Kamia suffered additional casualties during conflicts with the Mexican military at Huerta and ultimately fled to the live with the Quechan, for the most part.

<u>Historic Period (after ca. 1770)</u>

The project area lies on or near important routes of exploration, travel, and transportation that crossed the Colorado Desert during the late eighteenth, nineteenth, and twentieth centuries. It has seen agricultural development, urbanization, and associated land uses, beginning in the early twentieth century.

The region encompassing the present project area entered written history in the 1770s, when the expeditions under Juan Bautista de Anza and Francisco Garcés penetrated west from the lower Colorado River and linked Sonora with coastal southern California. Subsequent use of the overland route was interrupted by the 1781 Quechan revolt, but resumed in the early nineteenth century. Regular travel along this branch of the Southern Immigrant Trail by couriers and mail carriers, immigrants, commercial stage lines, the military, surveyors, and cattle drivers, as well as cattle rustlers and outlaws, began during the Mexican and American periods (Lawton 1976:65; Warren et al. 1981).

In 1853, surveyors under the auspices of the U.S. government sought to find a southern route for the transcontinental railroad and expanded the geographical and scientific knowledge of the area (Blake 1853). It was at this time that William Blake, the geologist on the expedition, first identified Lake Cahuilla for the American public and documented the geological traces of the extinct lake. This was also the period of the 1856 U.S. Government Land Office survey, which recorded several historic trails (Warren and Roske 1981:94; Warren et al. 1981:11).

The Southern Pacific Railroad (SPRR) line was constructed in 1877. It generally ran along the eastern margin of the Salton trough, but portions of its alignment had to be relocated farther east in the early 1900s when they were flooded by the rising Salton Sea. The San Diego & Arizona Eastern Railroad, established in 1906, passed through El Centro.

1.3.2 Record Search Results

During the Class III inventory for this project, ASM conducted a records search at the South Coastal Information Center (SCIC) for the project area and a 1-mi. radius surrounding it. The search involved a review of known archaeological sites, the coverage of previous cultural resources survey reports, historic addresses, and a historic maps database. The records search identified that there are no previously recorded cultural resources located within the project area (Confidential Appendix B). There have also not been any cultural resources studies within the project area. In the area within the records search buffer there have only been five previous cultural resources studies conducted, consisting primarily of linear surveys. The records search also noted that there are 13 previously recorded sites located within a 1-mi. radius of the project area. These are all prehistoric sites, and are primarily located near the ancient shoreline of Lake Cahuilla.

During the fieldwork for the Class III inventory, four sites and eight isolates were encountered within the current project APE (Figure 1.3 - *Confidential Appendix A*). The sites were recorded on standard DPR forms and submitted to the SCIC and assigned permanent trinomials CA-SDI-20,345, 20,346, 20,347, and 20,348. These sites required formal evaluation for significance, the results of which are presented in the current report.

1.4 APPLICABLE REGULATIONS

Cultural resource regulations that apply to the project area are the County of San Diego RPO, the San Diego County Local Register of Historical Resources (Local Register), CEQA, and provisions for the CRHR.

Historic or archaeological districts, sites, buildings, structures, and objects are assigned significance based on their exceptional value or quality in illustrating or interpreting the heritage of San Diego County in history, architecture, archaeology, engineering, and culture. A number of criteria are used in demonstrating resource importance.

In general, cultural resources that have data of scientific value are recommended as significant and eligible for CRHR listing, based on the application of state criteria for significant resources under CEQA (Pub. Res. Code SS5024.1, Title 14 CCR, Section 4852). CEQA contains regulations regarding cultural resources as historical resources, unique archaeological sites, and human remains. These provisions assist in assessing the importance of cultural resources. Section 15064.5 (a) of the CEQA guidelines provides a definition of "Historical Resources." Section 15064.5 (c) contains additional provisions regarding archaeological sites. Sections 15064.5 (d) and (e) contain additional provisions regarding human remains.

Other regulations must also be considered during evaluation of cultural resources. Specifically, the County of San Diego's RPO protects significant cultural resources. The RPO defines "Significant Prehistoric and Historic Sites" in Section 2.

Determining what is an important cultural resource worth preserving is a subjective and interpretive process. Therefore, it is useful to utilize a standard assessment approach to evaluate cultural resources. In order to evaluate cultural resources, a comprehensive assessment must be conducted, including measuring the resource against the above CEQA guideline provisions and criteria established by the CRHR and RPO, as well as assessing the integrity of the resource.

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2.0 GUIDELINES FOR DETERMINING SIGNIFICANCE

Determining resource significance is a two-step process. First, the cultural environment must be identified. Then the criteria for determining significance must be applied to the resource. A number of criteria are used in identifying the significance of historical/archaeological resources and are based upon the criteria for inclusion in the San Diego County Local Register. Significance is assigned to districts, sites, buildings, structures, and objects that possess exceptional value or quality to assist in illustrating or interpreting the heritage of San Diego County in history, architecture, archaeology, engineering, and culture.

The fact that a resource is not listed in or determined to be eligible for listing in the CRHR, or is not included in a local register of historical resources (pursuant of Section 5020.1(k) of the Public Resources Code [PRC]), or is not identified in an historical resources survey (meeting the criteria in Section 5024.1(g) of the Public Resources Code) does not preclude a lead agency from determining that the resource may be a historical resource as defined in PRC section 5020.1(j) or 5024.1.

Any site that yields information or has the potential to yield information is considered a significant site. Unless a resource is determined to be "not significant," it will be considered significant for management purposes.

2.1 COUNTY OF SAN DIEGO RESOURCE PROTECTION ORDINANCE (RPO)

The County uses the CRHR criteria to evaluate the significance of cultural resources. In addition, other regulations must be considered during the evaluation of cultural resources. Specifically, the County of San Diego's RPO defines significant prehistoric and historic sites.

The County defines a significant prehistoric or historic site under its RPO as follows:

1. Any prehistoric or historic district, site, interrelated collection of features or artifacts, building, structure, or object either:
   (a) Formally determined eligible or listed in the National Register of Historic Places (NRHP); or
   (b) To which the Historic Resource (H designator) Special Area Regulations have been applied; or
2. One-of-a-kind, locally unique, or regionally unique cultural resources which contain a significant volume and range of data or materials; and
3. Any location of past or current sacred religious or ceremonial observances which is either:

(a) Protected under Public Law 95-341, the American Religious Freedom Act, or PRC Section 5097.9, such as burials, pictographs, petroglyphs, solstice observatory sites, sacred shrines, religious ground figures, or

(b) Other formally designated and recognized sites which are of ritual, ceremonial, or sacred value to any prehistoric or historic ethnic group.

2.2 SAN DIEGO COUNTY LOCAL REGISTER OF HISTORICAL RESOURCES

The County maintains a Local Register that was modeled after the CRHR. Significance is assigned to districts, sites, buildings, structures, and objects that possess exceptional value or quality illustrating or interpreting the heritage of San Diego County in history, architecture, archaeology, engineering, or culture. Any resource that is significant at the national or state level is by definition significant at the local level. The criteria for eligibility for the Local Register are comparable to the criteria for eligibility for the CRHR and NRHP, but significance is evaluated at the local level. Included are:

(1) Resources associated with events that have made a significant contribution to the broad patterns of California or San Diego County's history and cultural heritage;

(2) Resources associated with the lives of persons important to our past, including the history of San Diego and our communities;

(3) Resources that embody the distinctive characteristics of a type, period, region (San Diego County), or method of construction, or represent the work of an important creative individual, or possesses high artistic values; or.

(4) Resources that have yielded or are likely to yield, information important in prehistory or history.

Districts are significant resources if they are composed of integral parts of the environment that collectively (but not necessarily as individual elements) are exceptional or outstanding examples of prehistory or history.

The County also treats human remains as "highly sensitive." They are considered significant if interred outside a formal cemetery. Avoidance is the preferred treatment.

Under County guidelines for determining significance of cultural and historical resources, any site that yields information or has the potential to yield information is considered a significant site (County of San Diego 2007:16). Unless a resource is determined to be "not significant" based on the criteria for eligibility described above, it will be considered a significant resource. If it is agreed to forego significance testing on cultural sites, the sites will be treated as significant resources and must be preserved through project design (County of San Diego 2007:19).

2.3 CALIFORNIA REGISTER OF HISTORIC RESOURCES AND THE CALIFORNIA ENVIRONMENTAL QUALITY ACT

CEQA requires that all private and public activities not specifically exempted be evaluated against the potential for environmental damage, including effects to historical resources. Historical resources are recognized as part of the environment under CEQA, which defines historical resources as "any object, building, structure, site, area, or place that is historically significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California" (Division I, Public Resources Code, Section 5021.1[b]).

Lead agencies have a responsibility to evaluate historical resources against the CRHR criteria prior to making a finding as to a proposed project's impacts to historical resources. Mitigation of adverse impacts is required if the proposed project will cause substantial adverse change. Substantial adverse change includes demolition, destruction, relocation, or alteration such that the significance of an historical resource would be impaired. While demolition and destruction are fairly obvious significant impacts, it is more difficult to assess when change, alteration, or relocation crosses the threshold of substantial adverse change. The CEQA Guidelines provide that a project that demolishes or alters those physical characteristics of an historical resource that convey its historical significance (i.e., its character-defining features) is considered to materially impair the resource's significance. The CRHR is used in the consideration of historical resources relative to significance for purposes of CEQA. The CRHR includes resources listed in, or formally determined eligible for listing in, the NRHP and some California State Landmarks and Points of Historical Interest. Properties of local significance that have been designated under a local preservation ordinance (local landmarks or landmark districts), or that have been identified in a local historical resources inventory may be eligible for listing in the CRHR and are presumed to be significant resources for purposes of CEQA unless a preponderance of evidence indicates otherwise.

Generally, a resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing on the CRHR (Pub. Res. Code SS5024.1, Title 14 CCR, Section 4852) consisting of the following:

- It is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States; or
- It is associated with the lives of persons important to local, California, or national history; or
- It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master, or possesses high artistic values; or,

It has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California, or the nation.

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3.0 RESEARCH DESIGN

Several basic objectives have guided this study. These have included addressing resource management issues that would be applicable to most cultural resource management (CRM) archaeological investigations, as well as efforts to identify regional research opportunities for future investigations at the study sites. The following research design is based in part on a discussion in a previous report (Laylander and Garnsey 2007).

3.1 MANAGEMENT CONCERNS

3.1.1 Integrity

Integrity is potentially a critical dimension in assessing the potential status of the study site as an historical resource. The ability of archaeological sites to contribute significant information concerning regional prehistory is often closely linked with the degree to which the contextual relations of cultural residues have either been preserved intact or have been lost through postdepositional disturbances. Several varieties of integrity that are relevant to prehistoric archaeological resources can be distinguished. These include site integrity (the degree to which the site area as a whole is still available for investigation), assemblage integrity (the extent to which complete original assemblages have been preserved, in contrast to the loss of particular types of materials, for instance through erosion or undocumented collecting), and vertical and horizontal integrity (preservation of the original relative positions of the cultural materials, in contrast to the loss of those spatial relationships, for instance through bioturbation).

The aspect of integrity that is probably most frequently addressed in archaeological studies is vertical integrity. However, this is a significant concern only to the degree that multiple chronological components are present and that distinguishing between them is important for interpreting the site's contents.

Integrity has been assessed primarily on the basis of surface observations concerning natural erosion or modern disturbance, plus subsurface assessments of site stratigraphy and of patterning in the vertical distribution of prehistoric and modern cultural materials within the deposit.

3.1.2 Chronological Placement

Efforts to place the study site chronologically are important in assessing its research value. Site components dating from periods that are poorly represented in the local archaeological record, such as the period prior to about A.D. 700, may have a high importance for their potential to fill in major gaps in the regional chronological record. However, components from later periods may also be able to contribute important additional detail to the emerging picture of paleoenvironmental events in this region (notably the rises and recessions of Lake Cahuilla) and the cultural responses to them. Assemblages that cannot be securely placed chronologically, either because they lack datable material or because of extensive intermixing of chronologically diverse components, would be less likely to possess a significant research potential.

Potential chronometric evidence from the study site includes radiocarbon dates, obsidian hydration measurements, and diagnostic artifact forms. Radiocarbon dates are generally the most precise and reliable form of chronometric evidence, and they provide the foundation for the region's prehistoric chronology. However, in some cases, obsidian hydration measurements may have a more direct cultural interpretation, they are individually less expensive, and they are able to address very late prehistoric to protohistoric time periods that cannot be distinguished through radiocarbon dating. Chronologically diagnostic artifacts include various projectile point forms and pottery, although these only define very broad time periods. Specific types or attributes of buffware ceramics may have a potential to define somewhat more precise time ranges, but that potential is not yet well established.

3.1.3 Site Function

Interpretation of the study site depends upon an assessment of its place within the larger settlement-subsistence system of its occupants. Sites belonging to functional types that are relatively ubiquitous within the region would be less likely to be considered significant than unusual site types. Sites with evidence of multiple functions may possess a richer information content than relatively simple sites; on the other hand, single-function sites may have a greater research potential than multiple-function sites if the residues from the various activities at the latter cannot be effectively differentiated.

Evidence for the functional poses represented by the site comes from surface observations made during both the survey and testing phases, as well as through the results of subsurface excavations. Interpretations of functions rest upon both the range and the relative and absolute frequencies of various classes of features, artifacts, and ecofacts.

3.1.4 Native American Heritage Values

Federal and state laws mandate that consideration be given to the concerns of contemporary Native Americans with regard to potentially ancestral human remains, associated funerary objects, and items of cultural patrimony. Consequently, an important element in assessing the significance of the study site has been to evaluate the likelihood that these classes of items are present in areas that would be affected by the proposed project.

Also potentially relevant to prehistoric archaeological sites is the category termed Traditional Cultural Properties in discussions of CRM performed under federal auspices. According to Patricia L. Parker and Thomas F. King (1998);

> "Traditional" in this context refers to those beliefs, customs, and practices of a living community of people that have been passed down through the generations, usually orally or through practice. The traditional cultural significance of a historic property, then, is significance derived from the role the property plays in a

community's historically rooted beliefs, customs, and practices. Examples of properties possessing such significance include:

- a location associated with the traditional beliefs of a Native American group about its origins, its cultural history, or the nature of the world;
- a rural community whose organization, buildings and structures, or patterns of land use reflect the cultural traditions valued by its long-term residents;
- an urban neighborhood that is the traditional home of a particular cultural group, and that reflects its beliefs and practices;
- a location where Native American religious practitioners have historically gone, and are known or thought to go today, to perform ceremonial activities in accordance with traditional cultural rules of practice; and
- a location where a community has traditionally carried out economic, artistic, or other cultural practices important in maintaining its historic identity.

A traditional cultural property, then, can be defined generally as one that is eligible for inclusion in the National Register because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community.

There are no indications that the site discussed in this report functions as a Traditional Cultural Property, for instance with regard to current religious practices, although Native American consultation would be necessary to make a definitive assessment.

3.2 POTENTIAL REGIONAL RESEARCH TOPICS

The specific ways in which sites may be able to contribute to the understanding of regional prehistory usually cannot be determined with certainty in advance of test excavations. However, there were several general themes that can be identified as likely to be relevant to these sites and that consequently have been used in guiding the evaluation process.

3.2.1 Chronology Building

A continuing concern of key importance for archaeological research is to define the chronology of prehistoric change within the region. Prehistoric remains that have been convincingly dated to periods prior to about A.D. 500 are still comparatively rare in the Colorado Desert and would potentially represent important research opportunities. However, survey-level observations did not suggest that the study site was likely to fall into this category. Within the Late Holocene period, dating to after about A.D. 500, the general chronological picture is considerably more detailed, but it is still very hazy or uncertain in many of its details. A key issue concerns the validity of the frequently used cultural sequence of Patayan I, II, and III phases (also termed Yuman I, II, and III) (Rogers 1945; Waters 1982a). This scheme has now been called into question by the longer and more complex history of Lake Cahuilla's rises and falls that has now emerged during the last two decades, as well as by the increasing number of challenges to the time ranges that were previously proposed for specific buff ware pottery types or attributes.

The potential for the study sites to make significant further contributions to building the regional chronology is closely tied to the likelihood of being able to obtain radiocarbon dates, probably from concentrations of charcoal or bone, from interpretively meaningful contexts within the site. Ceramic sherds with distinctive characteristics that are found in association with radiocarbon dates may be able to test and refine the region's pottery type/attribute chronology. Similarly, associated specimens of obsidian may be able to contribute to the development of a more solidly based and precise regional hydration chronology.

3.2.2 Paleoenvironmental Change and Resource Use

Prehistoric Lake Cahuilla dominated the region's prehistoric landscape. Reconstructing the lake's chronology and its changing character is a key to understanding prehistoric cultural adaptations to this rich but uniquely unstable environment.

The potential of the study sites to address these issues depends primarily upon the presence of the substantial samples of faunal remains, in particular the remains of freshwater fish and seasonally migrant aquatic birds. It also depends upon the occurrence of such residues in contexts that can be placed within a relative or absolute chronology.

3.2.3 Settlement Organization

The role of Lake Cahuilla sites within larger regional settlement systems has been an issue of considerable debate. An early scientific argument concerned whether the lake was a major focus of permanent or semipermanent settlement (Wilke 1978) or whether it was used more sporadically and incidentally (Weide 1976). Subsequent studies have suggested that there was substantial variability between different portions of the shoreline, with relatively intensive use of the lake's northwestern margin in the Coachella Valley and a much lower level of occupation along most of the eastern shoreline (Schaefer and Laylander 2007). The contrast may be attributable in part to differences in the hinterlands of the two areas: the nearby, relatively resource-rich Peninsular and Transverse mountain ranges lie to the west and north, and provide some runoff into the Whitewater River and San Felipe Creek, whereas the very arid Orocopia and Chocolate mountains and Algodones sand dunes lie to the east, separated by a gap of 35-80 km from the lower Colorado River. The present study area, located in the western portion of the lake's basin, may shed light on settlement patterns in this area and on the factors causing intraregional differences in such patterns.

Two main types of evidence may be able to clarify the nature of the occupation at the study site. One is the intensity and duration of the occupation, for instance as suggested by the accumulation of midden deposits and evidence for prehistoric investment in the construction of features such as house structures or storage areas. The other type of evidence comes from the activities that are attested at the study site. These may suggest multifunctional, full-community occupation (for instance, through the presence of flake lithic tools, milling tools, various types of ceramic vessels, and ceremonial items), perhaps with nonlocal resources being brought to this base. Alternatively, the assemblage may reflect a specialized task area, such as a fish-processing camp, that was likely used by a small logistical party.

3.2.4 Interregional Connections

Colorado Desert ethnography and ethnohistory attest to cultural, social, and economic connections between the peoples of this region and those in surrounding regions to the north, south, east, and west. Archaeological evidence in the form of exotic raw materials or regionally distinctive manufactured items may shed further light on these connections and the ways they evolved during the prehistoric past.

Extra-regional exotic lithic materials that might occur at the study site include obsidian from San Felipe in northeastern Baja California, from Coso in the northern Mojave Desert, or possibly from sources in Arizona and Sonora. Exotic obsidian may have substituted for material from the local Obsidian Butte source, which would have been inaccessible when Lake Cahuilla was present. Another identifiably exotic lithic material was wonderstone, a silicic rock that was quarried both at the Rainbow Rock source to the north of the study site and at Cerro Colorado, south of the site and just across the international border in northern Baja California.

Pottery may also provide valuable evidence of interregional contacts. While at least some varieties of buffware were probably manufactured locally, others may have been produced exclusively on the lower Colorado River and then brought to the study site. Tizon Brownware is a somewhat vaguely defined category that has been identified as manufactured both in Arizona to the east of the Colorado River and in the Peninsular Range west of the Colorado Desert. It is also possible that ceramics from the Puebloan or Piman areas of the American Southwest might appear as rare trade items in the study site.

Marine shell, most likely in the form of beads or ornaments but possibly also as food refuse, would attest to coastal contacts. The warm waters of the northern Gulf of California hosted different species than the cooler Pacific waters (for instance, with *Olivella dama* coming from the Gulf and *O. biplicata* from the Pacific).

The potential of the study site to shed additional light on patterns of interregional contacts is dependent on finding exotic items at the site and being able to identify their original source areas.

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4.0 ANALYSIS OF PROJECT EFFECTS

4.1 METHODS

This chapter describes basic methods used for implementing an evaluation program at CA-SDI-20,345, CA-SDI-20,346, CA-SDI-20,347, and CA-SDI-20,348. The archaeological evaluation conducted in the testing phase was designed according to methods and procedures developed by ASM and its colleagues over many years of archaeological study in southern California and complies with federal and state guidelines regarding cultural resource evaluations and eligibility recommendations (Giambastiani and Basgall 2000; Hale and Becker 2006; Hale and Comeau 2010; Schaeffer 1994, 2000a, 2000b). Field methods and techniques were intended to maximize artifact recovery from sparse archaeological deposits..

4.1.1 Survey Methods

Evaluation methods are essentially sampling methods geared toward recovering a reasonably-sized assemblage to estimate the density and diversity of the cultural deposit, and to expose enough of the site deposit to determine integrity. A general approach is described below, from surface inspection and collection, to the various kinds of subsurface investigation. Considerations of site-specific methods are described next, with particular attention paid to hypothetical plans for unit distribution relative to proposed areas of impact.

The first step in site evaluation is to relocate datums, artifact concentrations, features, and landforms noted on the original site forms. The next step is to conduct regular-interval sweeps of the site surface pin-flagging artifacts, concentrations, and features to confirm original mapped items and site boundaries and establish a real-time visual perspective of site properties. This phase is made more efficient with the use of color-coded pin flags representing diagnostic artifacts, features, etc.

After the site is defined with pin-flags, a surface collection strategy is implemented. At prehistoric sites, areas containing sufficiently high densities of surface artifacts are typically sampled with 15-x-15-m controlled surface collections (CSCs). There were no features identified during the current investigation and the distribution of artifacts on the surface of the sites was relatively sparse so CSCs were not employed. The locations of artifacts on the surface were recorded using a Trimble GPS unit and then collected.

4.1.2 Test Methods

There are various types and sizes of units that may be employed for collecting subsurface archaeological data. The spatial distribution, density, and characteristics of the artifacts associated with the site along with the types of research questions driving the study are integral in determining the number and size of excavation units to use. The current investigation sought to determine the depth and distribution of four small, low density prehistoric sites. Shovel Test Pits (STPs) were the only excavation type employed at the sites because of the extremely low density of artifacts on the surface and low potential for subsurface deposits. All units have square corners to enable expansion of units to more thoroughly explore deposits. STPs are small, 0.5 x 0.25 m exploratory units excavated in 10 or 20-cm increments to depths of no more than 80 cm, and typically spaced at 10-m intervals or subjectively placed. STPs are typically used to explore the extent and depth of cultural deposits.

. All excavated matrix was screened through 1/8-in (3 mm) mesh..The sites were mapped using a Trimble Pathfinder GPS receiver with real-time correction capabilities and down to 10 cm accuracy to plot all formed artifacts and excavation units. The GPS was also used to record site boundaries, landform edges, drainages, roads, and other relevant surface information. In addition to the mapping a series of overview photographs were taken to show the site landscape situation. Photographs were also taken of other site attributes when appropriate.

4.1.3 Laboratory Methods

Laboratory work included standard processing and cataloging of the materials recovered in the field, and special studies to address the program's research issues.

Standard Processing, Cataloging, and Analysis

Initial lab procedures include cleaning (as appropriate), sorting, and cataloging of all items. Each item is individually examined and cataloged according to class, subclass, and material, counted (except for bulk invertebrate and vertebrate remains) and weighed on a digital scale.. All coded data is entered into a Microsoft Access database. Data manipulation of a coded master catalog combining all sites is performed in Microsoft Excel.

When possible, cores are separated by platform variability into subclasses such as multidirectional, unidirectional and bifacial types. Debitage, including both flakes and debris, are sorted by material type and cortical variation (primary, secondary, and interior) during cataloging. The classification of flaked stone tools is determined by typology and production technology. Simple Flake tools (i.e., unmodified utilized flakes) are identified based on the presence of macroscopic use-wear traces. Retouched tools include scrapers, gravers, notched pieces, and other edge-modified flakes. Bifaces include projectile points, drills, and standard non-patterned bifaces. Length, width, and thickness measurements are taken for all tools and cores using a sliding caliper.

Percussing tools, including hammers and abraders, are defined based on their morphology and the type of macroscopic use-wear they exhibit. Ground stone artifacts are classified by type, including millingstones and handstones. Length, width, and thickness measurements are taken on complete ground stone items.

Organic artifact classes (ecofacts) consisted of vertebrate and bulk shell specimens. After bulk shell is cataloged, it is sorted to taxon and coded into an Access subcatalog. Modified bone and shell artifacts will be separated from the unmodified bone and shell assemblages. Historic and modern items are cataloged and identified as specifically as possible, but further study may not be undertaken if none are of ethnohistoric origin. Finally, other organic samples are cataloged by type.

4.1.4 Curation

All materials recovered by ASM from this project were placed in 4-mil bags, along with artifact tags providing catalog number, artifact description, and provenience information. All artifactual material was then placed in archival-quality boxes. At the completion of the project, all materials and associated documentation will be turned over for permanent curation at the SDAC. All DPR forms and updates will be submitted to the SCIC at the completion of the project.

4.1.5 Native American Participation

For the current investigation, County staff will conduct a Sacred Lands Check with the Native American Heritage Commission (NAHC) as well as communicate with any Native American individual or organization that my possess knowledge about Sacred Sites or be affected by the project. During the current testing, Gabe Kitchens of Red Tail Monitoring and Research served as the Native American monitor for the project.

4.2 RESULTS

On June 23, 2011, the four sites identified during the Phase I investigation within the project area for the Ocotillo Wells Solar Project (CA-SDI-20,345, CA-SDI-20,346, CA-SDI-20,347, and CA-SDI-20,348) were subject to archaeological testing. The testing was observed by Native American Monitor, Gabe Kitchen from Redtail Monitoring. This testing included relocation of the sites, collection of artifacts located on the surface, as well as the excavation of Shovel Test Pits (STPs) to determine the presence of buried cultural deposits. STPs measure 0.25 x 0.5 m and were excavated no more than 10 m apart in 10-cm increments. STPs are essentially positive-negative indicators for the presence of cultural deposits. All four archaeological sites are all located on a deflated desert alluvium in area where wind erosion has removed most if not all topsoil, resulting in surficial sites only. All cultural items recovered from testing were recovered from the surface (Table 4.1).

Table 4.1 Ocotillo Wells Solar Archaeological Evaluation Results

Site	Size	STPs	Surface Collection	Recommended Eligible
CA-SDI-20,345	5-x-10 m	STP 1 and 2; 20 cmbs; Negative	6 ceramic sherds	No
CA-SDI-20,346	15-x-10 m	STP 1, 2, and 3; 20 cmbs; Negative	40 ceramic sherds	No
CA-SDI-20,347	4-x-5 m	STP 1 and 2; 20 cmbs; Negative	1 lithic core, 4 debitage	No
CA-SDI-20,348	12-x-16 m	STP 1 and 2; 20 cmbs; Negative	8 ceramic sherds	No

4.2.1 CA-SDI-20,345

This site was recorded by Willis et al. (2011) as a small prehistoric ceramic scatter covering an approximate 5-x-10-m area containing approximately six buffware potsherds (Figure 4.1). This was confirmed by this investigation. All six ceramic sherds were pin flagged and the site area and surrounding vicinity was intensively inspected for additional cultural materials, although none were found. Two STPs were excavated at this site to determine the presence or absence of subsurface cultural resources (Figures 4.2a-b – *Confidential* Appendix A). The STPs were excavated in arbitrary 10-cm intervals until two sterile levels had been excavated. Both of the STPs were sterile of all cultural items at the first two levels when, at 20 cm, consolidated rock inhibited further excavation; additional testing was therefore determined to be unnecessary at this site. The items located on the surface of the site were collected, these consisted of six pot sherds, and analyzed in the laboratory according to the previously described procedures. This soil at the site was light brown loose sand with decomposed granite rocks throughout, the vegetation in the vicinity consists of creosote bush (*Larrea tridentata*), and saltbush (*Atriplex* sp.). This site is does not meet significance criteria to be listed on the CRHR and does not qualify as an RPO protected resource.

Figure 4.1 CA-SDI-20,345 overview taken towards the west.

4.2.2 CA-SDI-20,346

This site was recorded by Willis et al. (2011) as a prehistoric ceramic scatter containing approximately 55 buffware potsherds covering an approximate 15-x-10-m area (Figure 4.3). Relocation of the site identified just 40 sherds, despite intensive surface inspection. All ceramics were collected from the surface as a grab sample; artifact density was too low to warrant use of CSC units. Three STPs were excavated to determine the presence of subsurface cultural deposits (Figures 4.4a-b – *Confidential* Appendix A). The STPs were excavated in arbitrary 10-cm intervals until two sterile levels had been excavated. At a depth of 20 cm, interlocking cobbles made additional excavation difficult. None of the STPs contained artifacts and additional testing was therefore determined to be unnecessary. This soil at the site was light brown loose sand with decomposed granite rocks and sand throughout. Vegetation, consisting of creosote bush and saltbush, is too sparse in and around the site to aid the accumulation of sediments and it is not surprising that all cultural material was exposed on the surface. The collection of surface artifacts along with the negative subsurface deposits exhausted the site assemblage and indicates that this site is not significant under CEQA and is not an RPO protected resource.

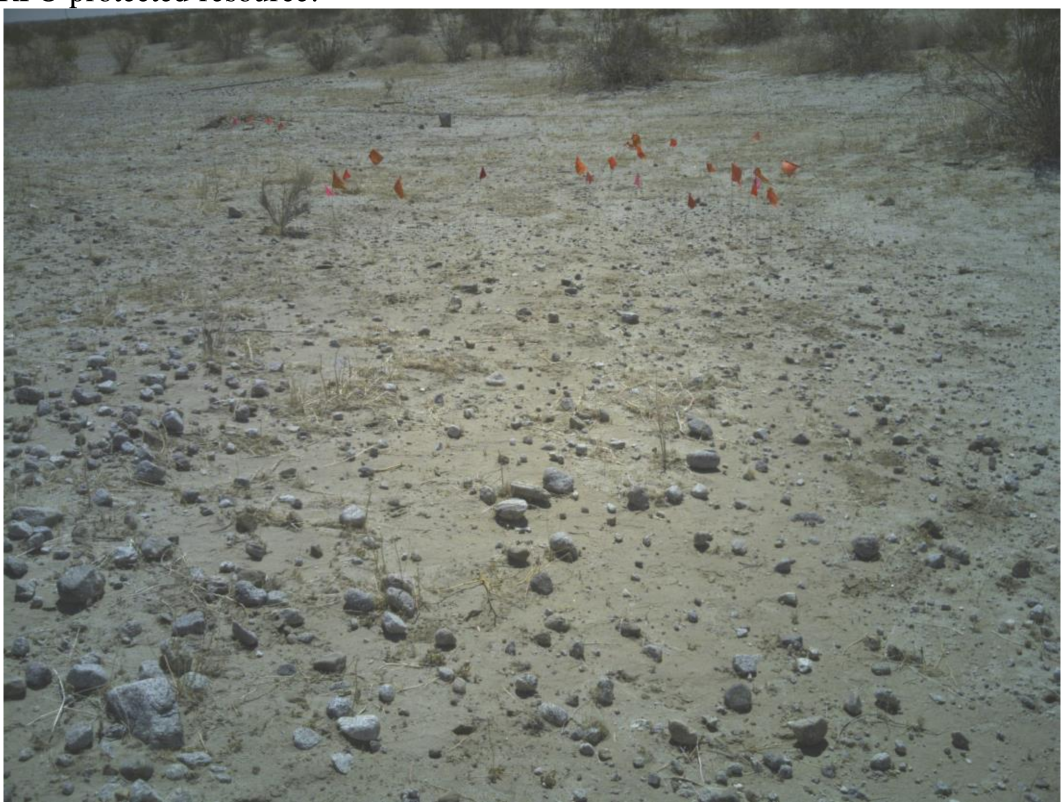

Figure 4.3 CA-SDI-20,346 overview taken towards the east.

4.2.3 CA-SDI-20,347

This site was recorded by Willis et al. (2011) as a small lithic scatter containing one quartzite core and six pieces of quartzite debitage within an approximate 4-x-5-m area. However, the current evaluation only determined that the assemblage was comprised of one quartzite core and four pieces of quartzite debitage; two of the previously identified flakes were determined to be natural pieces of quartzite that occurs as float in the local colluvial deposits. The core was collected as a piece plot with its position recorded with a Trimble GPS unit, and the debitage was collected as a general site surface collection (Figure 4.5). Two STPs were excavated in arbitrary 10-cm intervals until two sterile levels had been excavated; both were terminated at 20 cm (Figures 4.6a-b – *Confidential* Appendix A). Both of the STPs were sterile and additional testing was deemed unnecessary as it was clear from the deflated surface that significant or substantial cultural deposits at this site were very unlikely. Creosote and saltbush were sparsely distributed across the surface, with several creosote roots exposed; another sign of deflation. This site has low data potential and site deposits were exhausted; it does not appear to meet the criteria for CRHR listing or RPO protection.

Figure 4.5 SDI-20,347 overview taken towards the north.

4.2.4 CA-SDI-20,348

This site was recorded by Willis et al. (2011) as a prehistoric ceramic scatter containing approximately ten buffware potsherds located in an approximate 12-x-16-m area. The current evaluation program identified just eight sherds because two pieces were found to refit. All sherds were collected as a grab sample due to their low density (Figure 4.7). Two STPs were excavated in arbitrary 10-cm intervals to a depth of 20 cm when consolidated cobbles inhibited further excavation (Figures 4.8a-b – *Confidential* Appendix A). Both of the STPs were sterile and additional testing was therefore determined to be unnecessary. This soil at the site was light brown loose sand with decomposed granite rocks throughout. This evaluation program exhausted the site deposit, and with the low data potential of the assemblage, the site does not appear to meet the criteria for CRHR listing or RPO protection.

Figure 4.7 CA-SDI-20,238 overview taken toward the east.

4.2.5 Isolates

Eight isolated artifacts were identified and recorded during the Phase I survey. These isolated finds are predominately prehistoric ceramics or lithic debitage, consistent with items found at the recorded archaeological sites within the project area and in the region as a whole. Two USGS survey markers were also identified. Cultural resource isolates are not considered eligible for listing in the CRHR or the Local Register, are not considered important under County Guidelines, and are not significant under County RPO and were thus not subjected to a testing program. A list of the isolates encountered during the Phase I inventory are presented in Table 4.2.

Table 4.2 Summary of Isolates

Primary Number P-37-	Description	Age
032107	3 buffware sherds	Prehistoric
032108	1 quartzite flake	Prehistoric
032109	1 buffware sherd	Prehistoric
032110	1916 USGS survey marker	Historic
032111	1916 USGS survey marker	Historic
032112	1 buffware sherd	Prehistoric
032113	1 buffware rim sherd	Prehistoric
032114	4 buffware sherds	Prehistoric

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5.0 INTERPRETATION OF RESOURCE IMPORTANCE AND IMPACT IDENTIFICATION

5.1 RESOURCE IMPORTANCE AND MANAGEMENT CONCERNS

The evaluation of four prehistoric archaeological sites (CA-SDI-20,235, CA-SDI-20,236, CA-SDI-20,237, and CA-SDI-20,238) failed to document any significant or substantial cultural deposits. No buried cultural artifacts or deposits were identified, and the local geologic context, consisting of deflated colluvium, makes it very unlikely that buried deposits are present in the project area. Overall, the four sites represent transient behavior, during which a ceramic vessel was dropped or a local quartzite cobble was tested for suitability. These four sites reflect ephemeral occupation of the general region and are insignificant compared to the substantial and diverse assemblages located to the east along the ancient Lake Cahuilla shoreline outside of the project area. The four tested sites contribute little to local and regional prehistory because of their small, limited-diversity assemblages, and because their age cannot be narrowed down more precisely than to the last 1,000 or so years.

The previous cultural resources inventory resulted in the discovery of four small archaeological sites and eight isolated artifacts. All four of the archaeological sites (CA-SDI-20,345, CA-SDI-20,346, CA-SDI-20,347, and CA-SDI-20,348) are consistent with prehistoric transient occupation geared toward lithic retooling, while ceramic fragments indicate a dropped pottery vessel. The situation of these sites less than two miles from the ancient Lake Cahuilla high-stand shoreline is a strong indication that the occupants of the four sites were in the area to take advantage of local resources. However, there are no indications from these four sites of anything more than a brief stop to repair or replenish stone toolkits with some accidental pot drops. Ceramic fragments are common in the region, and their presence at the current set of sites is an indication of either incidental breakage of water or food storage vessels, or of breakage during food preparation. In either case, economic activities at the four sites were limited in diversity and intensity. A contrasting pattern—i.e., one of intensive occupation—is reflected in a series of large habitation sites that are located on or near the old lake shoreline more than 1 mi. to the east of the current project area. The records search identified these large habitation sites, which not only have robust and diverse assemblages but also have stone features such as fish traps and residential rock rings. When contrasted with these intensive habitation sites, the four sites are a minor component of prehistoric occupation of the general region.

Testing of these four sites combined with surface collection of the artifacts has exhausted the data potential of the sites. No subsurface deposits were encountered nor are any believed to exist. None of the four archaeological sites contain enough cultural material or deposits to be considered eligible for listing on the CRHR, or to be protected as significant sites under the San Diego County RPO. The description of isolated artifacts substantially exhausted their data potential, negating the possibility of being considered eligible for CRHR listing.

Additionally, eight isolates were also previously identified within the current study area. However, cultural resource isolates are not considered eligible for listing in the CRHR or the Local Register, are not considered important under County Guidelines, and are not significant under County RPO.

5.2 IMPACT IDENTIFICATION

The Ocotillo Wells Solar Farm Project proposes installation of a solar farm for the long-term generation of clean, renewable energy from solar power (see Figure 1.3). Based on the current project design three sites (CA- SDI-20,235, CA-SDI-20,236, and CA-SDI-20,237) will be directly impacted (see Figure 1.3 - *Confidential* Appendix A). CA-SDI-20,348 is not within the current design plan APE and will not be impacted by the project. The eight isolates are within the project design area and may be directly impacted by the project.

However, based on the results of the testing program, it is recommended that the four sites and the eight isolates not be considered significant resources pursuant to the guidelines of the County RPO, the CRHR, and CEQA. The archaeological investigation has exhausted the sites' data potential and indicated that no significant subsurface cultural deposits are likely to be present. Further archaeological work at the site is not likely to produce substantially different or unique data that would change the conclusions herein. As such, the current project is likely to not have a significant effect on historical resources.

6.0 MANAGEMENT CONSIDERATIONS – RECOMMENDATIONS

While the four sites CA-SDI-20,345, 20,346, 20,347, 20,348 are not recommended as significant, it is recommended that monitoring by a qualified archaeologist and Native American observer be performed during all ground disturbance, in case of an inadvertent discovery of significant buried cultural resources with the APE.

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8.0 LIST OF PREPARERS AND PERSONS AND ORGANIZATIONS CONTACTED

Micah Hale (ASM Affiliates): Acted as Project Manager and Principal Investigator, and co-authored the technical report.

Chad Willis (ASM Affiliates): Acted as Field Director and co-authored the technical report.

James Daniels (ASM Affiliates): Principal Investigator and co-author of the technical report.

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9.0 LIST OF MITIGATION MEASURES AND DESIGN CONSIDERATIONS

It is recommended that a qualified archaeologist and Native American monitor be present during all ground disturbance associated with this project in case of the inadvertent discovery of sensitive cultural resources within the APE. No further mitigation measures are recommended, because no significant historical resources have been identified in the project area.

APPENDICES

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APPENDIX A

Site Location Maps and Site Forms – *Confidential*

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APPENDIX B

Records Search

Available Under Separate Cover

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